

PATENT APPLICATION S/N: 09/775,881

ATTORNEY DOCKET NO.: P-2196.01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Patent Application of:	Sunny Behl		
Serial Number:	09/775,881	Art Unit:	2835
Filed:	February 2, 2001	Examiner:	Boris Leo Chervinsky
For Title:	REMOVABLE MEMORY STORAGE DEVICE CARRIER HAVING A HEAT SINK		

Mail Stop: Appeal
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, JAMES D. IVEY, certify that this paper and the enclosed: Appeal Brief Appendix, PTO/SB/21 Transmittal Form, Form PTO/SB/17 Fee Transmittal, and Form PTO2038 for Appeal fees are being transmitted by facsimile to (703) 872-9319 to Mail Stop: Appeal, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on August 11, 2003.

August 11, 2003


James D. Ivey, Reg. No. 37,016

APPEAL BRIEF

Applicant hereby files this Appeal Brief in support of the Appeal initiated by a Notice of Appeal filed on June 10, 2003. The requisite fee under 37 CFR 1.17(c) of \$160 is enclosed herewith. For the reasons given below, Applicant respectfully requests reversal of Examiner's rejection of Claims 1-20 under 35 U.S.C. §§ 102 and 103.

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I. Real Party in Interest

The real party in interest is the assignee, SysKey International Corp. The documents establishing ownership of the instant Application are not recorded in the U.S. Patent and Trademark Office. However, Applicant respectfully asserts that SysKey International Corp. of San Jose, California is the true owner of the instant Application and is therefore the real party in interest.

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II. Related Appeals and Interferences

There are no known related appeals or interferences.

III. Status of the Claims

Claims 1-20 are pending and stand rejected. Claims 1, 2, 5, 6, 13, 14, 17, and 18-20 are rejected under 35 U.S.C. §102(e) as being anticipated by Chang (U.S. Patent 5,694,290) .

Claims 3, 4, 15, and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chang (U.S. Patent 5,694,290) in view of Lin (U.S. Patent 5,514,036). Claims 7 and 8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chang (U.S. Patent 5,694,290) in view of either Wyler (U.S. Patent 5,510,954) or Ende (U.S. Patent 4,642,715). Claims 9-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chang (U.S. Patent 5,694,290) in view of either Wyler (U.S. Patent 5,510,954) and Lin (U.S. Patent 5,514,036). The rejections of Claims 1-20 under Sections 102 and 103, are appealed.

IV. Status of Amendments

All amendments have been entered. A Response to Office Action which included only remarks was filed on June 10, 2003 in response to the Examiner's final Office Action dated November 4, 2002. The Examiner has not indicated in an Advisory Action dated July 1, 2003 that the June 10, 2003 Response will be entered upon filing of the present Appeal Brief but has indicated that the arguments presented therein have been considered.

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V. Summary of the Invention

The present invention pertains to removable hard drive carriers in which hard disk drives can be readily removed from a computer case. With such a carrier, a user can readily remove one hard drive and substitute another hard drive without opening the computer case. Such represents a significant convenience for computer users who tend to frequently modify their computer configurations.

Ordinarily, a hard disk drive is mounted inside a computer case in a location which is not externally accessible but which has some space around the disk drive to allow cooling air to flow through. In a carrier, the hard disk drive is enclosed tightly to fit within a standard 5.25-inch drive bay of a computer case. In addition, carriers are typically made of inexpensive yet thermally insulating material such as plastic. Accordingly, cooling of hard drives in carriers is a primary concern.

In accordance with the present invention, a removable hard disk drive carrier includes a heat sink mounted on the carrier to absorb, conduct, and dissipate heat generated by any hard disk drive contained within the carrier. In one embodiment, the heat sink includes fins running lengthwise along the carrier and fans at the front of the carrier blow air over the heat sink to dramatically improve cooling of an enclosed hard disk drive.

The improvement in cooling provided by the heat sink and carrier combination according to the present invention significantly improves reliability of hard disk drives used in conjunction therewith.

VI. Issues

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- A. Does the Cited Art, Collectively or Individually, Teach or Suggest a Removable Hard Disk Drive Carrier with a Heat Sink Mounted to the Carrier?

VII. Grouping of the Claims

All claims at issue stand or fall together.

VIII. Argument

- A. Does the Cited Art, Collectively or Individually, Teach or Suggest a Removable Hard Disk Drive Carrier with a Heat Sink Mounted to the Carrier?

Chang Alone

The Examiner rejected Claims 1-20 as unpatentable in view of Chang, either alone or in combination with Lin, Wyler, and/or Ende. Applicant respectfully appeals this rejection and requests reversal of the Examiner's rejection.

In support of this rejection, the Examiner cites "a heat sink 60" of Chang. Applicant respectfully submits that item 60 of Chang is not a heat sink. Change refers to item 60 as "a cover 60" (at column 3, line 19). Applicant respectfully submits that a "cover" is not a "heat sink." Nothing in Chang teaches or suggests that cover 60 acts as a heat sink. In fact, showing that cover 60 includes ventilating slots 62 (at column 4, line 18) suggests that cover 60 does not dissipate heat and therefore does not act as a heat sink.

In response to Applicant's prior presentation of the argument of the previous paragraph, the Examiner stated in the March 10, 2003 final Office Action that Applicant's argument "is not persuasive because its structural arrangement and the presence of slots clearly suggest the heat

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sinking function as defining feature of a heat sink.”

Applicant respectfully notes that, despite whatever lexicology or lexicography is used by Chang, upper cover 60 cannot reasonably be considered a heat sink as the term is generally understood. The American Heritage Dictionary of the English Language, Fourth Edition, defines a heat sink as “A protective device that absorbs and dissipates the excess heat generated by a system.” Other definitions repeat the heat absorption and dissipation characteristics of heat sinks. The Free On-Line Dictionary of Computing (<http://www.foldoc.org>) defines a heat sink as “A piece of thermally conductive metal attached to a semiconductor or other electronic device and designed to prevent it from overheating by conducting heat away from it and radiating it to the environment.” Thus, heat absorption and thermal conductivity are defining features of a heat sink. To the extent the Examiner has taken Official Notice that a “heat sink” can include thermally insulating material with vents, Applicant seasonably challenged such Official Notice in the Response filed June 10, 2003 and requested supporting documentation of the existence of such an unconventional interpretation of “heat sink.”

Chang neither teaches nor suggests that upper cover 60 is thermally conductive or otherwise absorbs and conducts heat. In fact, inclusion of ventilating slots 62 in upper cover 60 suggests that upper cover 60 is not thermally conductive. Such a suggestion is bolstered by the general knowledge that upper covers of disk carriers such as upper cover 60 of box body 40 are frequently made of plastic, a thermally insulating material.

The only teaching, suggestion, or motivation for deviating from the ventilated, slotted plastic cover taught and suggested by Chang is provided by Applicant’s Specification at page 5, lines 22-25, which teaches that “the heat sink 100 can closely stack multiple memory storage

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devices in a memory storage housing ... without overheating." Such stacking of Chang's carrier would obstruct ventilating slots 62, and Chang does not provide any teaching or suggestion that upper cover 60 is, or any motivation that upper cover 60 should be, thermally conductive, absorbing and dissipating heat, i.e., a heat sink.

Claims 1, 2, 5, 6, 13, 14, 17, and 18-20 stand rejected in view of Chang alone. Claim 1 recites "a heat sink mounted on the carrier." Claims 2, 5, and 6 depend from Claim 1 and therefore implicitly recite the same limitation. Claim 13 recites "a heat sink slidably mounted on the carrier." Claims 14, 17, and 18 depend from Claim 13 and therefore implicitly recite the same limitation. Claim 19 recites "means for convective cooling mounted on the first means [for holding a hard disk drive and being removably mountable in a memory storage device housing]." Claim 20 depends from Claim 19 and therefore implicitly recites the same limitation. Accordingly, Claims 1, 2, 5, 6, 13, 14, 17, and 18-20 are allowable over Chang since Chang neither teaches nor suggests a heat sink mounted on a carrier for holding a hard disk drive.

Chang in View of Lin

The Examiner rejected Claims 3-4 (which depend from Claim 1) and 15-16 (which depend from Claim 13) as unpatentable over Chang in view of Lin. Applicant respectfully requests reversal of the Examiner's rejection.

In support of his rejection of Claims 3, 4, 15, and 16, the Examiner cited Lin as teaching a filter mounted on a face plate. However, the Examiner has not cited any teaching or suggestion within Lin for the missing heat sink element of Chang. Therefore, any combination of Chang and Lin would also lack the missing "heat sink" element. Claims 3, 4, 15, and 16 are therefore

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allowable over Chang combined with Lin, assuming arguendo such a combination is properly motivated in the prior art.

Chang in View of Wyler or Ende

The Examiner rejected Claims 7 and 8 (which depend from Claim 1) as unpatentable over Chang in view of Wyler or alternatively Ende. Applicant respectfully requests reversal of this rejection.

In support of the rejection of Claims 7 and 8, the Examiner cited Wyler and Ende as alternative teachings of fins as heat sinks. Applicant respectfully submits that, since Chang teaches no heat sink, the specific characteristics of heat sinks taught by Wyler and Ende are not properly combined with Chang since the record lacks any teaching, suggestion, or motivation to combine the heat sinks of Wyler and/or Ende with the ventilated carrier cover of Chang. To the extent the Examiner has taken Official Notice for such motivation to combine the references, Applicant seasonably challenged such Official Notice and respectfully requested supporting documentation in the June 10, 2003 Response.

In response to this previously presented argument, the Examiner stated that references "suggest that fins are commonly used on enclosing holding structures for heat generating devices." Applicant respectfully submits that, while Wyler and Ende may teach that heat sinks can include fins, neither reference teaches, suggests, or motivates one to replace the thermally insulating yet ventilated upper cover 60 of Chang with a heat sink, with or without fins.

Wyler teaches at column 6, lines 18-32, that heat sink 56, copper braiding 64, and metal bracket 62 provide a conductive heat path between a hard disk drive and the surrounding

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atmosphere through sound absorption material 66. Applicant finds no teaching, suggestion, or motivation in the cited art as to how such a conductive heat path would be advantageous in the carrier of Chang which is taught to already include ventilating slots 62.

Ende teaches (column 7, lines 14-20) that the cover 12 of the hard drive itself has fins 104 to dissipate heat. Since the hard drive itself has heat dissipating fins in Ende, it is counter-intuitive to add a heat sink to the ventilated carrier designed to hold such a hard disk.

Thus, neither Wyler nor Ende teach or suggest adding a heat sink to the heat-sink-less carrier taught by Chang. Accordingly, Claims 7 and 8 are allowable over Chang in view of Wyler and/or Ende.

Chang in view of Wyler and Lin

The Examiner rejected Claims 9-12 as unpatentable over Chang in view of Wyler and Lin. Claims 9-12 depend from Claim 1 and therefore recite the limitation of a heat sink mounted on a carrier. Since neither Wyler nor Lin provide any teaching or suggestion of mounting a heat sink on a hard drive carrier as discussed above, Claims 9-12 are allowable over the cited art for at least the reasons given above.

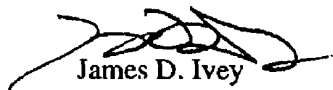
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Conclusion

In light of the above discussion, it is apparent that the Examiner has failed to establish that Applicants' Claims 1-20 are unpatentable in view of above-cited art. Accordingly, Applicants urge that all of the Examiner's rejections be reversed and respectfully requests that Claims 1-20 be allowed.

Respectfully submitted,


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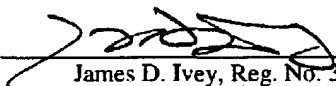
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James D. Ivey, Reg. No. 37,016**APPEAL BRIEF — APPENDIX**

Applicant respectfully submits the following Appendix to the Appeal Brief in the referenced case which is filed herewith. The following are the claims involved in this appeal.

1. A device for removably mounting a hard disk drive in a memory storage housing, comprising:
a carrier for holding a hard disk drive, the carrier being removably mountable in a memory storage device housing; and
a heat sink mounted on the carrier.
2. A device as set forth in Claim 1, wherein the carrier includes a face and a fan mounted on the face of the carrier.
3. A device as set forth in Claim 2, wherein the carrier includes an air filter mounted on the face to filter air.

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4. A device as set forth in Claim 3, wherein the carrier includes an air filter cover removably mounted on the face to facilitate removal and replacement of the air filter.

5. A device as set forth in Claim 1, wherein the carrier includes lateral rails that slidably mount the carrier in the memory storage housing.

6. A device as set forth in Claim 1, wherein the carrier includes a face and a handle mounted on the face of the carrier.

7. A device for removably mounting a hard disk drive in a memory storage housing, comprising:

a carrier for holding a hard disk drive, the carrier being removably mountable in a memory storage device housing; and
fins mounted on the carrier.

8. A device as set forth in Claim 7, further comprising:

a heat sink mounted on the carrier, wherein the heat sink includes the fins, the carrier includes a face and a fan mounted on the face of the carrier, the fins align with respect to the fan to optimize convective cooling.

9. A device as set forth in Claim 8, wherein the carrier includes an air filter mounted on the face to filter air.

10. A device as set forth in Claim 9, wherein the carrier includes an air filter cover removably mounted on the face to facilitate removal and replacement of the air filter.

11. A device as set forth in Claim 10, wherein the carrier includes lateral rails that slidably mount the carrier in the memory storage housing.

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12. A device as set forth in Claim 11, wherein the carrier includes a face and a handle mounted on the face of the carrier.

13. A device for removably mounting a hard disk drive in a memory storage housing, comprising:

a carrier for holding a hard disk drive, the carrier being removably mountable in a memory storage device housing; and
a heat sink slidably mounted on the carrier.

14. A device as set forth in Claim 13, wherein the carrier includes a face and a fan mounted on the face of the carrier.

15. A device as set forth in Claim 14, wherein the carrier includes an air filter mounted on the face to filter air.

16. A device as set forth in Claim 15, wherein the carrier includes an air filter cover removably mounted on the face to facilitate removal and replacement of the air filter.

17. A device as set forth in Claim 13, wherein the carrier includes lateral rails that slidably mount the carrier in the memory storage housing.

18. A device as set forth in Claim 13, wherein the carrier includes a face and a handle mounted on the face of the carrier.

19. A device for removably mounting a hard disk drive in a memory storage housing, comprising:

a first means for holding a hard disk drive, the first means being removably mountable in the memory storage device housing; and

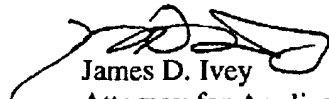
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a second means for convective cooling mounted on the first means.

20. A device as set forth in Claim 19, wherein the first means includes a face and a fan mounted on the face of the carrier.

Respectfully submitted,



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